

AMENDMENTS TO THE CLAIMS:

The following listing of claims replaces all prior versions of the claims and all prior listings of the claims in the present application.

Claims 1-48 (Cancelled).

49. (Currently Amended) A process for manufacturing a water-resistant telecommunication cable comprising a solid and compact element housing at least one transmitting element, wherein the solid and compact element comprises a water-soluble polymer material comprising:

a vinyl alcohol/vinyl acetate copolymer having a hydrolysis degree of 60-95% and a polymerisation degree higher than 1,800;

at least a first solid plasticizer, having a melting point of 50-100°C, and a second solid plasticizer having a melting point equal to or higher than 140°C, in an amount of 10-30 and 1-10 parts by weight per hundred parts by weight of the copolymer, respectively;

the water-soluble polymer material having:

a complex modulus equal to or higher than 2.5×10^6 MPa;

a ratio of the viscous modulus to the elastic modulus equal to or lower than 2.30;

a glass transition temperature of 20-35°C;

the process comprising:

continuously producing the water-soluble polymer material by separately feeding in sequence to a multi-screw extruder, in the flow direction, with the copolymer and the second solid plasticizer;

melting and mixing the copolymer and the second solid plasticizer at 170-220°C;

melting and mixing the first solid plasticizer with the second solid plasticizer and the copolymer at 140-180°C;

subsequently homogenizing the copolymer and the plasticizers at 100-150°C; and

discharging the melt, at a temperature lower than or equal to 205°C.

50. (Previously Presented) The process according to claim 49, wherein the solid and compact element comprises 30% by weight or more of the water-soluble polymer material.

51. (Previously Presented) The process according to claim 49, wherein the solid and compact element comprises 50% by weight or more of the water-soluble polymer material.

52. (Previously Presented) The process according to claim 49, wherein the solid and compact element comprises 75% by weight or more of the water-soluble polymer material.

53. (Previously Presented) The process according to claim 49, wherein the solid and compact element is a structural element of the cable.

54. (Previously Presented) The process according to claim 49, wherein the solid and compact element is a tubular element comprising at least one sheath comprising the water-soluble polymer material.

55. (Previously Presented) The process according to claim 54, wherein the tubular element is a single sheath substantially made of the water-soluble polymer material.

56. (Previously Presented) The process according to claim 54, wherein the tubular element is a double layer sheath, the inner layer being made of the water-soluble polymer material and the outer layer being made of a water-insoluble polymer material.

57. (Previously Presented) The process according to claim 54, wherein the tubular element is a three-layer sheath, the inner and the outer layers being made of the water-soluble polymer material and the intermediate layer being made of a water-insoluble polymer material.

58. (Previously Presented) The process according to claim 49, wherein the solid and compact element is a buffer tube and the transmitting element is an optical fibre.

59. (Previously Presented) The process according to claim 49, wherein the copolymer is 50-95% of the total weight of the water-soluble polymer material.

60. (Previously Presented) The process according to claim 49, wherein the copolymer is 60-85% of the total weight of the water-soluble polymer material.

61. (Previously Presented) The process according to claim 49, wherein the copolymer has a hydrolysis degree of 70-92% and a polymerisation degree of 2,500-3,700.

62. (Previously Presented) The process according to claim 61, wherein the copolymer has a polymerisation degree of 3,000-3,500.

63. (Previously Presented) The process according to claim 49, wherein the first and the second plasticizers comprise 12-25 and 3-7 parts by weight per hundred parts by weight of the copolymer, respectively.

64. (Previously Presented) The process according to claim 49, wherein the first and second plasticizers are polyhydric alcohols.

65. (Previously Presented) The process according to claim 49, wherein the first plasticizer is selected from sorbitol, trimethylolpropane, di-trimethylolpropane, methylpropyl propanediol, and mixtures thereof, and the second plasticizer is selected from mannitol, pentaerythritol, dipentaerythritol, trimethylolethane, and mixtures thereof.

66. (Previously Presented) The process according to claim 49, wherein the first plasticizer is trimethylolpropane or ditrimethylolpropane and the second plasticizer is pentaerythritol or dipentaerythritol.

67. (Previously Presented) The process according to claim 49, wherein the first and the second plasticizers comprise 20 and 5 parts by weight per hundred parts by weight of said copolymer, respectively.

68. (Previously Presented) The process according to claim 49, wherein the water-soluble polymer material comprises a third plasticizer, liquid at room temperature, in an amount of 0.5-10 parts by weight per hundred parts by weight of the copolymer, the third plasticizer being fed, after the copolymer and the second plasticizer, at 170-220°C.

69. (Previously Presented) The process according to claim 68, wherein the third plasticizer is a polyhydric alcohol.

70. (Previously Presented) The process according to claim 68, wherein the third plasticizer is selected from glycerol, ethylene glycol, diethylene glycol, triethylene glycol, propylene glycol, dipropylene glycol, tripropylene glycol, trimethylolpropane ethoxylates, pentaerythritol ethoxylates, and mixtures thereof.

71. (Previously Presented) The process according to claim 68, wherein the third plasticizer comprises 2-7 parts by weight per hundred parts by weight of said copolymer.

72. (Previously Presented) The process according to claim 68, wherein the third plasticizer comprises 5 parts by weight per hundred parts by weight of said copolymer.

73. (Previously Presented) The process according to claim 68, wherein the third plasticizer is diethylene glycol or triethylene glycol.

74. (Previously Presented) The process according to claim 68, wherein the third plasticizer is fed before the first solid plasticizer.

75. (Previously Presented) The process according to claim 49, wherein the complex modulus is 3.0×10^6 to 4.0×10^6 MPa.

76. (Previously Presented) The process according to claim 49, wherein the ratio of the viscous modulus to the elastic modulus is 0.5 to 2.0.

77. (Previously Presented) The process according to claim 49, wherein the glass transition temperature is 25°C to 30°C.

78. (Previously Presented) The process according to claim 49, wherein the melting and mixing of the copolymer and the second solid plasticizer are carried out at 180-210°C.

79. (Previously Presented) The process according to claim 49, wherein the melting and mixing of the first plasticizer with the copolymer and the second solid plasticizer are carried out at 150-170°C.

80. (Previously Presented) The process according to claim 49, wherein the homogenization of the copolymer with the plasticizers is carried out at 110-140°C.

81. (Previously Presented) The process according to claim 49, wherein the discharging of the melt is carried out at a temperature lower than or equal to 195°C.

82. (Previously Presented) The process according to claim 49, wherein the water-soluble polymer material comprises a hydrolysis stabilizer compound comprising a chelant group comprising two hydrogen atoms bonded to two respective heteroatoms selected from nitrogen, oxygen and sulphur, said two hydrogen atoms having a distance

between each of 4.2×10^{-10} m to 5.8×10^{-10} m, said stabilizer compound being present in an amount of at least 0.75 mmols per 100 g of the copolymer.

83. (Previously Presented) The process according to claim 82, wherein the stabilizer is fed together with the copolymer and the second solid plasticizer.

84. (Currently Amended) The process according to claim 82, wherein the stabilizer is ~~N,N'-hexane-1,6-diylbis (3-(3,5-di-ter-butyl-4-hydroxyphenyl)propionamide))~~
N,N'-hexane-1,6-diylbis (3-(3,5-di-tert-butyl-4-hydroxyphenyl)propionamide)).

85. (Previously Presented) The process according to claim 49, wherein the multi-screw extruder is a self-cleaning co-rotating fully intermeshing twin screw extruder, a Buss kneader, a Ring extruder RE[®] or a Farrell FCM[®] extruder.

86. (Previously Presented) The process according to claim 49, wherein the multi-screw extruder provides an energy input of 0.15-0.50 kWh/kg to the water-soluble polymer material.

87. (Previously Presented) The process according to claim 49, wherein the multi-screw extruder provides an energy input of 0.30-0.40 kWh/kg to the water-soluble polymer material.

88. (Previously Presented) The process according to claim 49, wherein the multi-screw extruder has a multi-zone thermally controlled barrel.

89. (Previously Presented) The process according to claim 49, wherein the multi-screw extruder comprises a thermal control apparatus.

90. (Previously Presented) The process according to claim 89, wherein the thermal control apparatus comprises an electrical system for heating and a water system for cooling.

91. (Previously Presented) The process according to claim 49, wherein a pressure build-up system followed by a die head are provided at the end of the multi-screw extruder.

92. (Previously Presented) The process according to claim 91, wherein the pressure build-up system is a tight pitch conveying section in the multi-screw extruder, a gear pump or a single screw extruder flanged or in cascade to the multi-screw extruder.

93. (Previously Presented) The process according to claim 91, wherein a cutting device is provided after the die head.

94. (Previously Presented) The process according to claim 93, wherein the cutting device is a dry air cutting system or a strand pelletizing system with fast centrifuge water separation.

95. (Previously Presented) A process for extruding a water-soluble polymer material comprising:

a vinyl alcohol/vinyl acetate copolymer having a hydrolysis degree of 60-95% and a polymerisation degree higher than 1,800;

at least a first solid plasticizer, having a melting point of 50-110°C, and a second solid plasticizer, having a melting point equal to or higher than 140°C, in an

amount of 10-30 and 1-10 parts by weight per hundred parts by weight of the copolymer, respectively;

the water-soluble polymer material having:

a complex modulus equal to or higher than 2.5×10^6 MPa;

a ratio of the viscous modulus to the elastic modulus equal to or lower than 2.30;

a glass transition temperature of 20-35°C;

the process comprising

continuously producing the water-soluble polymer material by separately feeding in sequence a multi-screw extruder, in the flow direction, with the copolymer and the second solid plasticizer;

melting and mixing the copolymer and second solid plasticizer at 170-220°C;

melting and mixing the first solid plasticizer with the second solid plasticizer and the copolymer at 140-180°C;

subsequently homogenizing the copolymer and the plasticizers at 100-150°C; and

discharging the melt at a temperature lower than or equal to 205°C.

96. (Previously Presented) The process according to claim 95, wherein the water-soluble polymer material comprises a third plasticizer, liquid at room temperature, in an amount of 0.5-10 parts by weight per hundred parts by weight of the copolymer,

the third plasticizer being fed, after the copolymer and the second plasticizer, at 170-220°C.

97. (Previously Presented) The process according to claim 95, wherein the water-soluble polymer material comprises a hydrolysis stabilizer compound comprising a chelant group comprising two hydrogen atoms bonded to two respective heteroatoms selected from nitrogen, oxygen and sulphur, said two hydrogen atoms having a distance between each other of 4.2×10^{-10} m to 5.8×10^{-10} m, said stabilizer compound being present in an amount of at least 0.75 mmoles per 100 g of the copolymer.